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(54) Abstract Title
Dust receptacle alignment means for a vacuum cleaner

(57) A vacuum cleaner comprises a cleaner body 10 and suction brush 12, a cyclone unit 20 mounted in said cleaner body, a dust receptacle 130 removably connected to the underside of said cyclone unit, locking means 140 to connect and separate said dust receptacle from said cyclone unit by moving said dust receptacle upwards and downwards, and means for preventing incorrect connection of said dust receptacle to said cyclone unit. Said means for preventing the incorrect connection comprises a pin 131 protruding from a lower part of the dust receptacle, and a guide slit 143 for receiving said pin on the locking unit, said guide slit being arranged to interrupt the movement of the locking unit or cause separation of the receptacle form the cyclone unit, if said receptacle is incorrectly mounted in relation to the cyclone unit. The locking unit comprises a lever 141 mounted rotatably on the cleaner body and a disc 142 arranged to be moved up and down by the rotation of the lever, to enable the dust receptacle to be moved upwards to engage the cyclone unit, or downwards to disengage it.

FIG.3

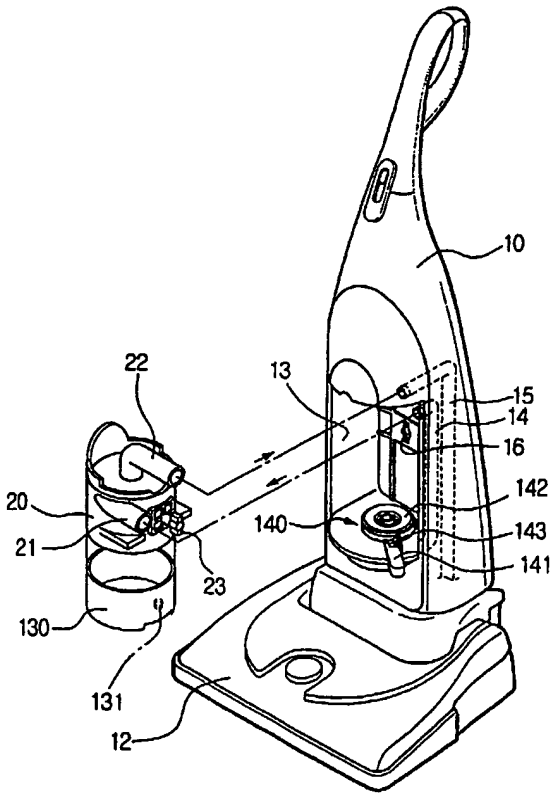

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FIG. 1

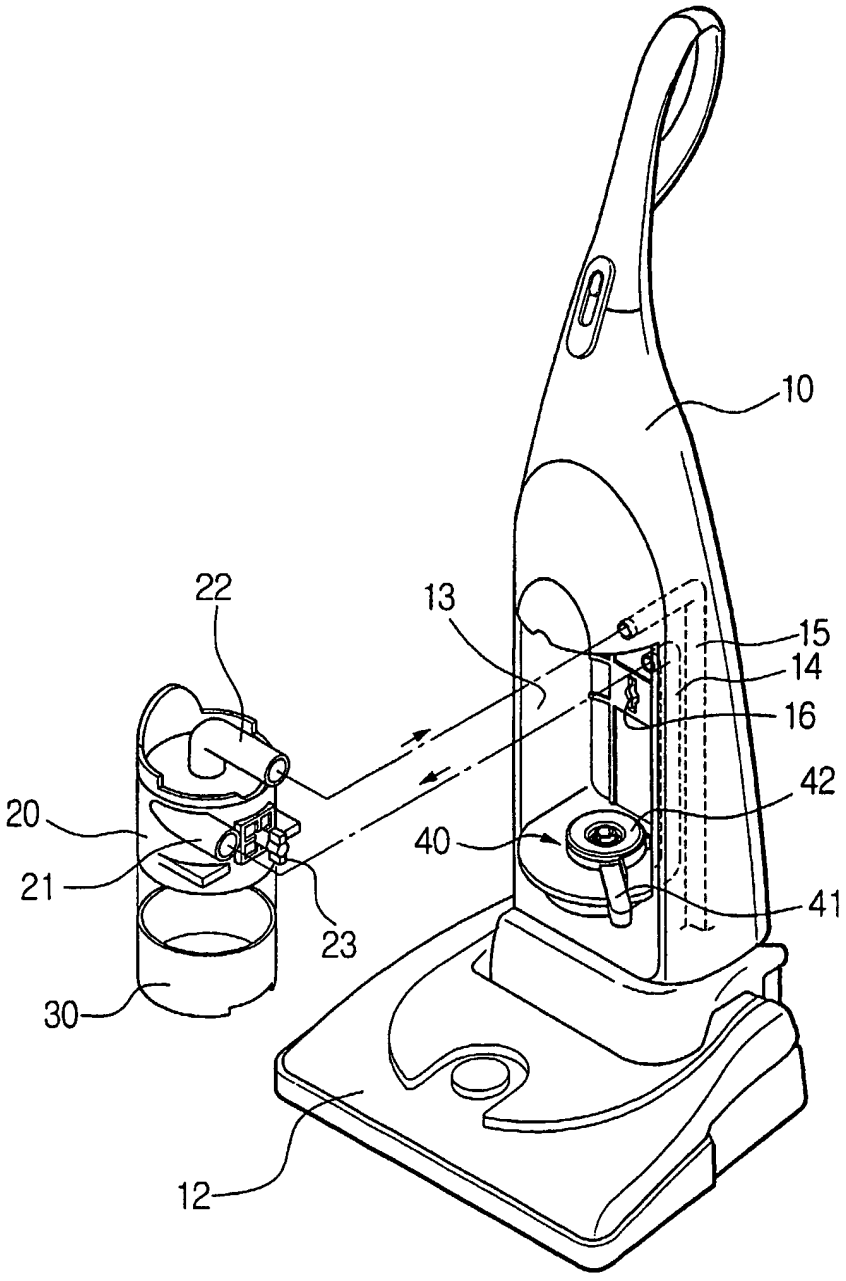


FIG.2

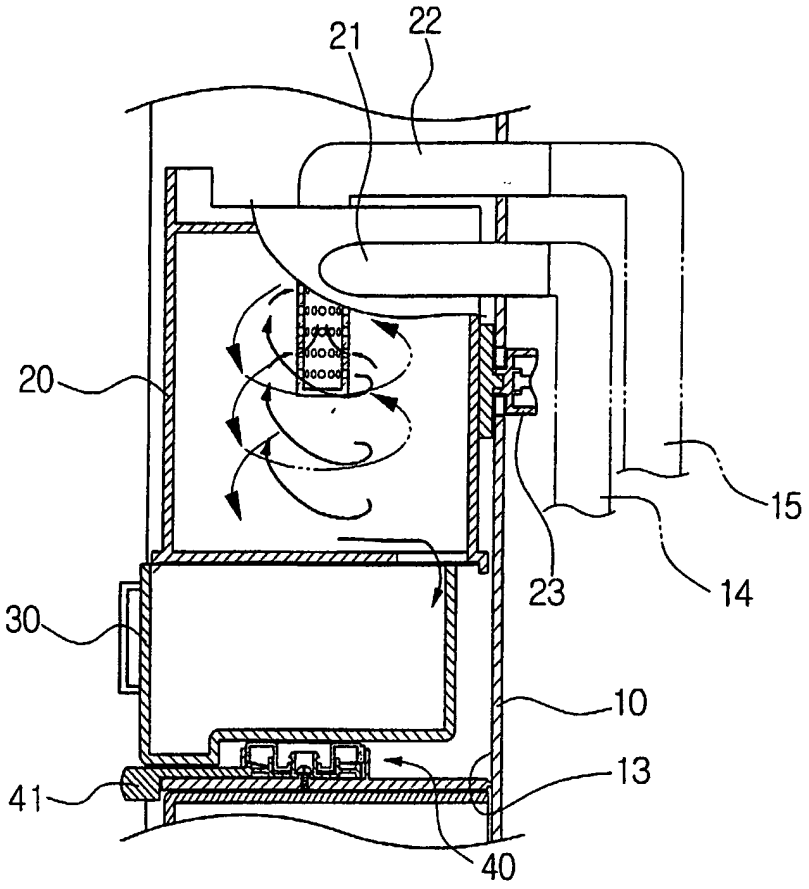


FIG.3

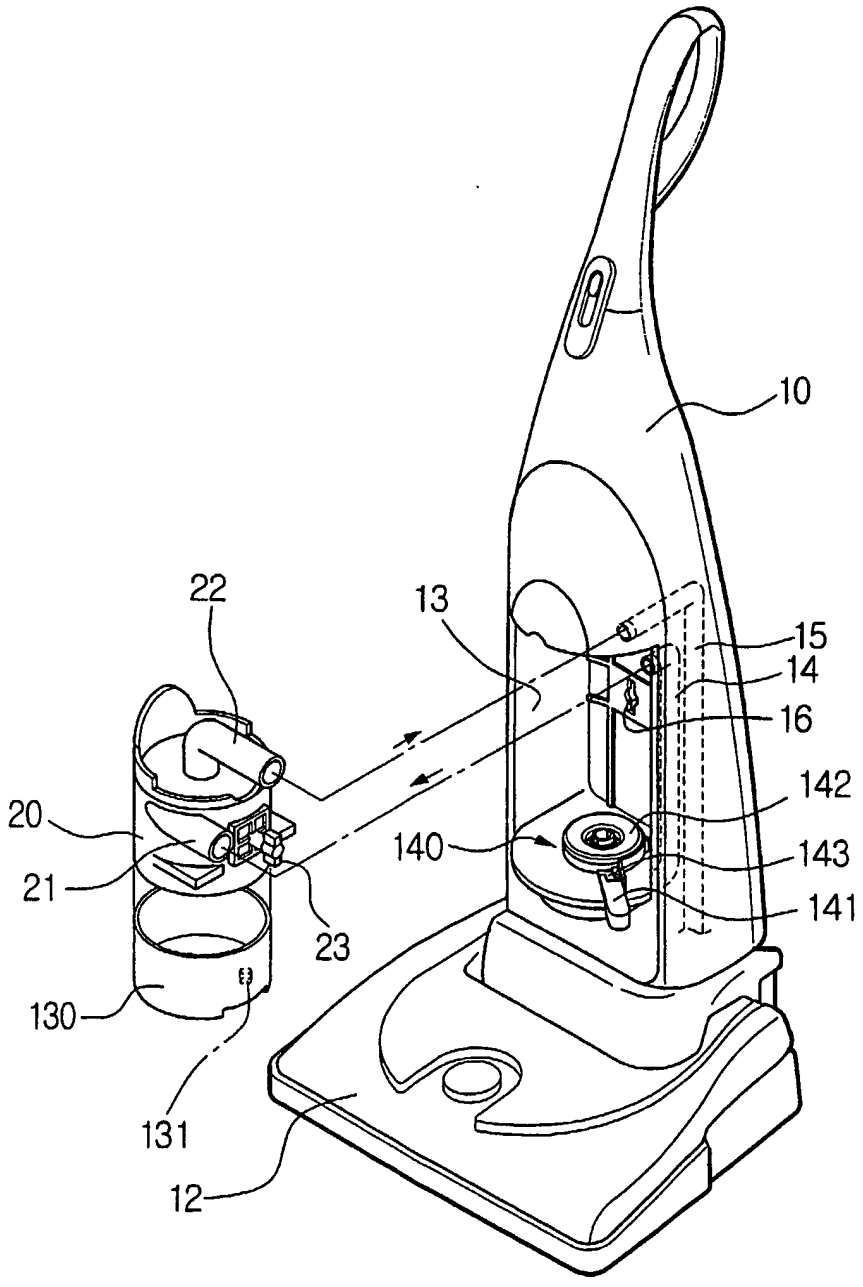


FIG.4

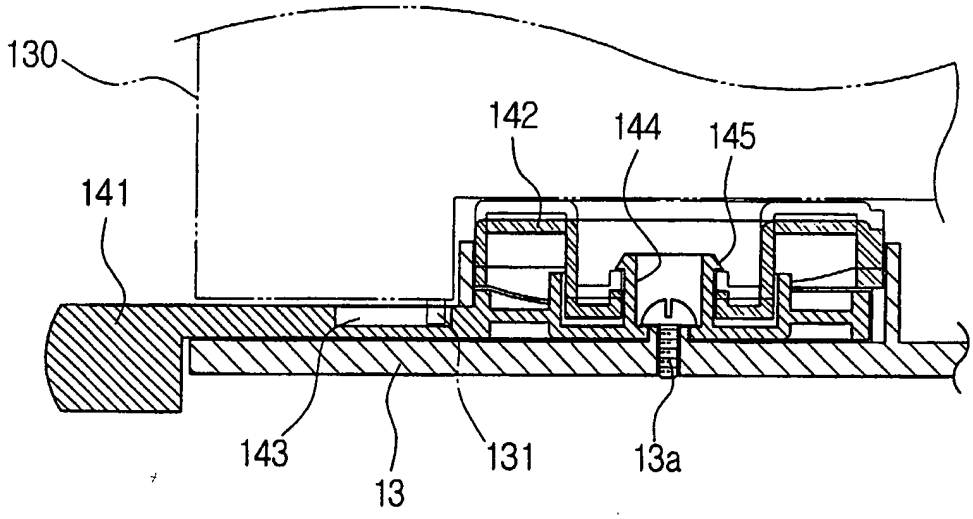

130
142
144
145
141
143
13
131
13a

FIG.5

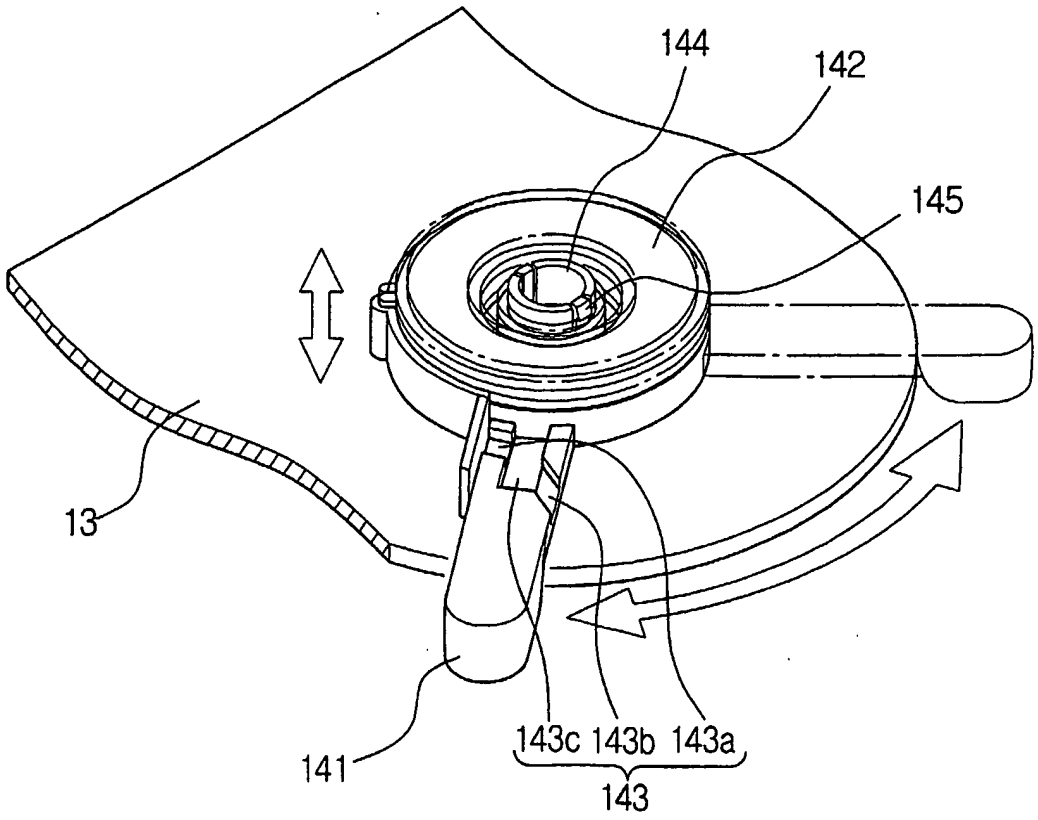

144
142
145
13
141
143c
143b
143a
143

FIG.6

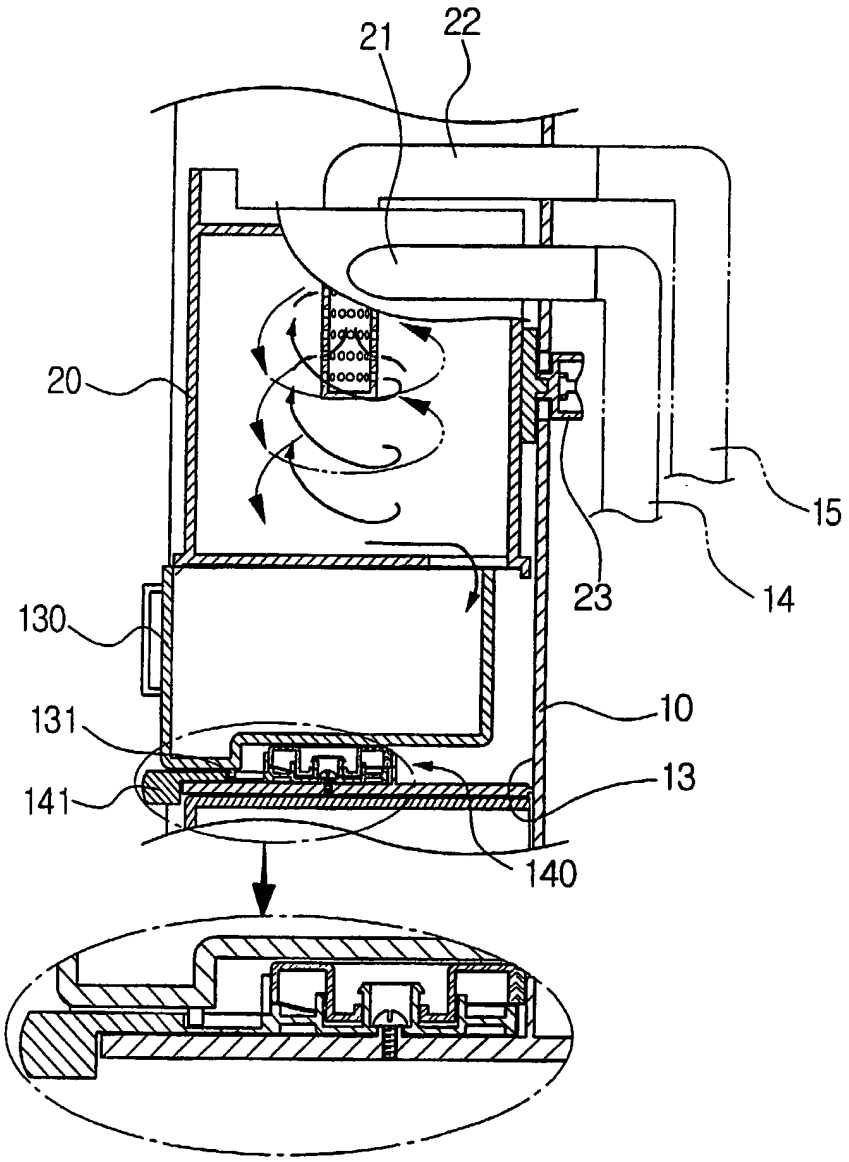


FIG.7

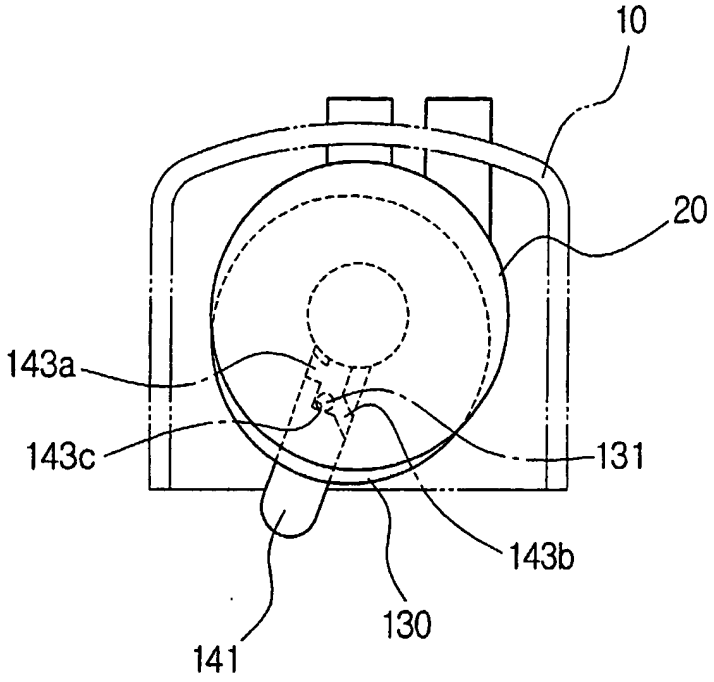
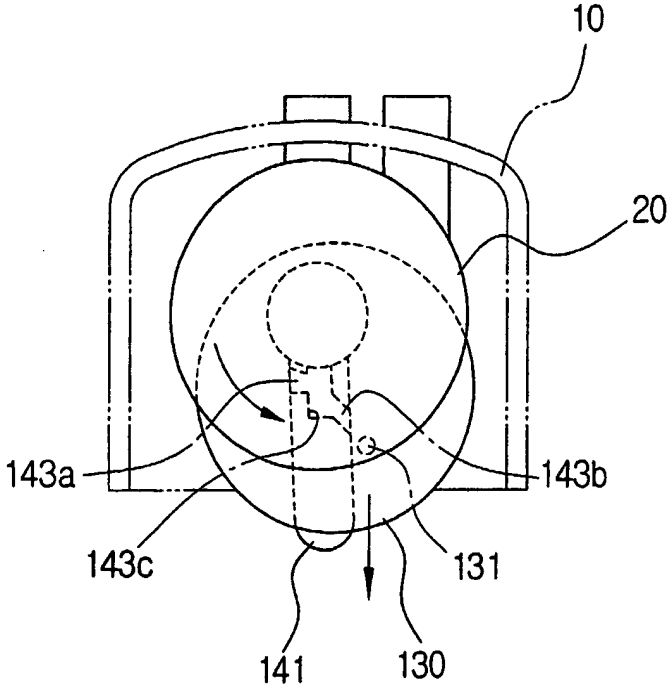

10
20
143a
143c
131
143b
130
141

FIG.8


10
20
143a
143b
143c
131
141
130

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UPRIGHT TYPE VACUUM CLEANER

The present invention relates generally to an upright type vacuum cleaner, and more particularly, to an upright type vacuum cleaner having a cyclone unit for separating contaminants from contaminant-laden air using centrifugal force generated by a revolving stream of drawn air.

Figure 1 shows an upright type vacuum cleaner, such as that disclosed in the applicant's co-pending US Patent Application No. 09/074,161, filed February 12 2002, the contents of which are incorporated herein by reference. The upright type vacuum cleaner of Figure 1 includes a cleaner body 10, a cyclone unit 20 and a dust receptacle 30.

Inside the cleaner body 10, a vacuum generating apparatus, i.e. a driving motor (not shown), is mounted. Attached to the underside 12 of the cleaner body 10, a suction brush is movably connected. In a front central portion of the cleaner body 10, a cyclone housing portion 13 is provided.

The cyclone unit 20 has an inflow passage 21 formed on an upper side wall, the inflow passage being connectable with the suction brush 12 through a pipe 14. Air and contaminants, drawn in from the surface to be cleaned by the suction brush 12, flow into the cyclone unit 20 via the inflow passage 21. At this time, the air is induced into a whirling current along the inner wall of the cyclone unit 20.

The cyclone unit 20 has an outflow passage 22 centrally formed on an upper portion of the cyclone unit 20, the outflow passage being interconnectable with the vacuum generating apparatus through a pipe 15. After contaminants are removed, the air is discharged from the cyclone unit 20 to a location external to the cleaner body 10, via the outflow passage 22 and the vacuum generating apparatus.

The cyclone unit 20 is housed in the cyclone housing portion 13 and includes a locking handle 23 for securely mounting the cyclone unit 20 within the cleaner body 10. The

locking handle 23 is, in use, inserted into a handle connection portion 16, located at the rear wall of cyclone housing portion 13, and then turned by 90° so as to fix the cyclone unit 20 in place.

As part of the locking operation, the dust receptacle 30 is removably mounted to a lower portion of the cyclone unit 20, these units together being mounted within the cyclone housing portion 13. The dust receptacle 30 is mounted at the lower portion of the cyclone unit 20, and then, by turning an operation lever 41 of a locking unit 40 mounted on the lower portion of the cyclone housing portion 13, a locking disc 42 is moved in the turning direction thereby to securably mount or separate the dust receptacle 30 to or from the lower portion of the cyclone unit 20.

Accordingly, a user can remove and empty the dust receptacle 30 without having to remove the cyclone unit 20 from the cleaner body 10.

However, a problem can occur when a user incorrectly connects the dust receptacle 30 to the cyclone housing portion 13. That is, the dust receptacle 30 may not be inserted completely into the cyclone housing portion 13. This can cause incorrect alignment with the lower portion of the cyclone unit 20. In this case, the user cannot turn the operation lever 41, and if the user tries to turn the operation lever 41 with force, the dust receptacle 30 and/or the operation lever 41 can become deformed or broken. If the cleaner is operated with the dust receptacle 30 incorrectly mounted, contaminants may leak through a gap caused by the incompletely or incorrectly connected dust receptacle 30, and so the process of collecting dust in the dust receptacle 30 can result in contamination of the neighbouring area.

Accordingly, it is an aim of the present invention to provide an upright type vacuum cleaner having an improved structure.

In one sense, the invention provides an upright type vacuum cleaner including: a cleaner body having a vacuum generating apparatus disposed therein and a suction brush disposed at a lower side; a cyclone unit for separating contaminants from contaminant-laden air and discharging contaminant-free air through an outflow passage

interconnected with the vacuum generating apparatus, the contaminant-laden air being drawn in through an inflow passage interconnected with the suction brush; a dust receptacle, removably connected to an underside of the cyclone unit, for collecting the contaminants separated by the cyclone unit from the air; a locking unit, which is movable in the cleaner body, for connecting and separating the dust receptacle to and from a lower portion of the cyclone unit by longitudinally moving the dust receptacle upwards and downwards; and a means for preventing an incorrect connection of the dust receptacle to the underside of the cyclone unit.

According to a first aspect of the invention, there is provided an upright type vacuum cleaner. comprising: a cleaner body having vacuum generating means arranged therein and a suction brush disposed at a lower portion thereof; a cyclone unit for separating contaminants from air which is drawn into the cleaner body, and for discharging contaminant-free air through an outflow passage connected to the vacuum generating means, the air being drawn into the cyclone unit through an inflow passage connected to the suction brush; a dust receptacle, removably connectable to the underside of the cyclone unit, for collecting contaminants that have been separated from the air by the cyclone unit; a movable locking unit arranged to connect and separate the dust receptacle, to and from the underside of the cyclone unit, by moving the dust receptacle upwards and downwards; and means for preventing incorrect connection of the dust receptacle to the underside of the cyclone unit.

The means for preventing incorrect connection can include a position guiding pin protruding from a predetermined location on a lower portion of the dust receptacle; and a guide slit formed at a predetermined position in the locking unit, the means being configured either to interrupt pivoting of the locking unit, or to guide the dust receptacle so that it is separated away from the cyclone unit, depending on whether the dust receptacle is correctly pre-mounted in the cyclone unit.

The locking unit can include an operation lever pivotally mounted in the cleaner body; and a locking disc arranged to be moved upwards or downwards, according to the pivoting of the operation lever, in order to move the dust receptacle upwards, to engage the cyclone unit, or downwards, to disengage from the cyclone unit.

The means for preventing incorrect connection may include: a position guiding pin protruding from a predetermined location on the lower side of the dust receptacle; and a guide slit formed in the operation lever, the slit being arranged either to interrupt the pivoting movement of the operation lever, or to guide the dust receptacle from a pre-mounting state so that it is separated away from the cyclone unit, if the dust receptacle is correctly pre-mounted in the cyclone unit.

The guide slit may include a first guide slit, formed in an upper surface of the operation lever, the first guide slit having a predetermined width and being arranged such that the guide pin is received within the first guide slit when the dust receptacle is in a normal position; a second guide slit, extending from the first guide slit in a direction generally transverse to the turning direction of the operation lever, the second guide slit being arranged to receive the guide pin, when the dust receptacle is incorrectly mounted, and to cause separation of the dust receptacle from the cyclone unit; and an interruption groove, formed between the first and second guide slits, and arranged to receive the guide pin when the dust receptacle is incorrectly mounted, and to cause turning of the operation lever to be interrupted.

According to a second aspect of the invention, there is provided an upright-type vacuum cleaner comprising: a cleaner body including a dust chamber, suction means, an air inflow path, and an air outflow path, the air outflow path connecting the dust chamber with the motor driving chamber; a suction brush pivotally coupled to the cleaner body, the air inflow path of the cleaner body connecting the suction brush to the dust chamber; a cyclone body mounted in the dust chamber, the cyclone body being in communication with the air inflow path and the air outflow path; a removable dust barrel coupled generally beneath the cyclone body; a movable locking unit arranged to connect or separate the dust barrel to or from the cyclone body by raising or lowering the dust barrel in the dust chamber; and misalignment prevention means arranged to prevent a connection being made between the dust barrel and the cyclone body when the dust barrel is not in a predetermined alignment position with respect to the cyclone body.

The invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is an exploded perspective view of an upright type vacuum cleaner, as disclosed in the applicant's co-pending US Patent Application Serial No. 09/074,161;

Figure 2 is a side-sectional view showing part of the upright type vacuum cleaner of Figure 1 in operation, following assembly;

Figure 3 is an exploded perspective view of an upright type vacuum cleaner according to the preferred embodiment of the present invention;

Figure 4 is a side-sectional detailed view of an important feature of the vacuum cleaner shown in Figure 3;

Figure 5 is a perspective view of a movable locking unit of the vacuum cleaner feature shown in Figure 4; and

Figures 6 to 8 are views showing various situations in which the dust receptacle is incorrectly mounted within the vacuum cleaner.

An upright type vacuum cleaner according to a preferred embodiment of the present invention includes a cleaner body 10, a cyclone unit 20, a dust receptacle 130, a movable locking unit 140 and means for preventing or hindering incorrect mounting of the dust receptacle.

The cleaner body 10 has a vacuum generating apparatus (not shown) disposed therein. The cleaner body 10 also has a suction brush rotatably formed at its lower side 12. A cyclone housing portion 13 is also formed at the front central portion of the cleaner body 10.

The cyclone unit 20 has an inflow passage 21 formed at an upper sidewall, the passage being interconnectable with the suction brush via a tube 14 (shown in phantom in

Figure 3). Accordingly, air and contaminants are drawn through the suction brush, and into the cyclone unit 20, via the inflow passage 21.

The inflow passage 21 is formed such that air, as it passes through the inflow passage 21, is drawn into the cyclone unit 20 at a tangential direction. Accordingly, the air is induced into a whirling air current, rotating around the inner sidewall of the cyclone unit 20.

The cyclone unit 20 also has an outflow passage 22 formed centrally on the upper end of the cyclone unit 20. The outflow passage 22 interconnects with the vacuum generating apparatus through a tube 15 (shown in phantom in Figure 3). When contaminants are removed from the circulating air, the resulting 'clean' air is discharged from the cleaner body 10, through the outflow passage 22, to a location external to the vacuum generating apparatus.

As Figure 3 shows, the pair of tubes 14, 15 extend between the cyclone housing portion 13 and, respectively, the vacuum generating apparatus and the suction brush, one outlet end of each tube being connected to the inner sidewall of the cyclone housing portion 13 and the other ends being respectively connected to the vacuum generating apparatus and to the suction brush. The pair of tubes 14, 15 are arranged such that the ends extending to the cyclone housing portion 13 are directed towards the front of the cyclone housing portion 13.

The inflow passage 21 and the outflow passage 22 of the cyclone unit 20 are arranged generally parallel to each other such that, when the cyclone unit is inserted into the cyclone housing portion 13, the passages can connect with the forward facing open ends of the tubes 14, 15. Accordingly, the inflow passage 21 and the outflow passage 22 are respectively connected to the pair of tubes 14, 15, by inserting the cyclone unit 20 horizontally into the cyclone housing portion 13.

A locking handle 23 is pivotally disposed on the rear outer wall of the cyclone unit 20 so that the handle is accessible from the back of the cleaner body 10. A handle connecting portion 16 is formed in the cleaner body 10, the shape of the connecting

portion substantially corresponding to the locking handle 23. Accordingly, the cyclone unit 20 can be securely mounted in the cleaner body 10 by inserting the locking handle 23 through the handle connecting portion 16, thereby joining the passages 21, 22 to the pair of tubes 14, 15, respectively, and then turning the locking handle 23 by 90°.

The dust receptacle 130 is removably connectable to the lower side (or base) of the cyclone unit 20. More specifically, with the cyclone unit 20 mounted in the cyclone housing portion 13 of the cleaner body 10, the dust receptacle 130 is initially pre-mounted at a lower portion of the cyclone unit 20 and then raised within the cyclone housing portion 13 to complete its connection with the cyclone unit 20 through manipulation of the movable locking unit 140, as described below. Contaminants, separated from the air in the cyclone unit 20, are collected in the dust receptacle 130, and a user can conveniently empty the dust receptacle 130 simply by separating and removing the dust receptacle 130.

As shown in detail in Figures 4 and 5, the movable locking unit 140 is disposed at the lower part of the cyclone housing portion 13 such that the dust receptacle 130 can be removably connected to the lower side of the cyclone unit 20 by the locking unit 140.

The locking unit 140 has an operation lever 141 and a locking disc 142. The operation lever 141 is pivotally connected about a hinge shaft 13a disposed on the lower surface of the cyclone housing portion 13, so that the lever 141 can rotate in the direction of the arrow (see Figure 5).

A hollow shaft, for example another hinge shaft 144, protrudes upwardly from the central part of the operation lever 141, the shaft providing the longitudinal upwards and downwards movement of the locking disc 142, as indicated by the vertical arrow (see Figure 5). A cantilever hook 145 acts as a catch for preventing separation of the locking disc 142 from the hinge shaft 144.

The operation lever 141 has a cam portion formed on its upper surface. The locking disc 142 also has a cam portion formed on its lower surface, said cam portion corresponding to the cam portion of the operation lever 141. By means of interrelated

movement of the cam portions of the operation lever 141 and locking disc 142, the locking disc 142 moves vertically upwards or downwards along the hinge shaft 144.

As shown in Figure 6, if the operation lever 141 is turned leftwards, the locking disc 142 is lowered thereby to unlock the connection between the cyclone unit 20 and the dust receptacle 130. If the operation lever 141 is turned rightwards, the locking disc 142 is vertically raised thereby to lock the connection between the cyclone unit 20 and the dust receptacle 130.

The incorrect mounting prevention means acts to prevent the dust receptacle 130 from being incorrectly connected to the lower side of the cyclone unit 20. Such means includes a position guiding pin 131 which protrudes from a predetermined position at the lower portion of the dust receptacle 130, and a guide slit 143 formed in the operation lever 141 of the locking unit 140, the slit being of a predetermined shape. The guide slit 143 is shaped and dimensioned either to allow normal connection of the dust receptacle 130 to the cyclone unit 20, to interrupt the pivoting operation of the locking unit 140, or to guide the dust receptacle 130, as it is moved from the pre-mounting position, thereby to separate it from the cleaner body 10, depending on whether the initial position of the dust receptacle 130 is correct or incorrect within the cyclone unit 20.

The guide slit 143 includes a first guide slit 143a, a second guide slit 143b and an interruption groove 143c.

As shown in Figure 5, the first guide slit 143a has a predetermined width, generally following the turning/pivoting direction of the operation lever 141, so that, when the dust receptacle 130 is in the correct position, travel of the guide pin 131 is not interrupted during turning of the operation lever 141.

The second guide slit 143b is formed in the operation lever 141 and extends away from the first guide slit 143a, generally transverse to the turning direction of the operation lever 141. If the dust receptacle 130 is incorrectly mounted, the guide pin 131 becomes situated in the second guide slit 143b. In this situation, if the operation lever 141 is

turned, the guide pin 131 is guided along the second guide slit part 143b and becomes separated from the operation lever 141. As a result, if the dust receptacle 130 is incorrectly mounted in this way, the dust receptacle 130 will become separated from the cyclone housing portion 13.

The interruption groove 143c is disposed between the first and second guide slits 143a and 143b, in such a way as to interrupt the guide pin 131 and the movement of the operation lever 141 when the dust receptacle 130 is in an incorrect position. The interruption groove 143c is formed lengthways along the operation lever 141 and interconnects the first and second guide slits 143a and 143b.

With reference to the upright type vacuum cleaner, constructed according to this preferred embodiment, when a user attempts to mount the cyclone unit 20 and the dust receptacle 130 into the cleaner body 10, firstly, the user securely mounts the cyclone unit 20 in the cyclone housing portion 13 of the cleaner body 10 using the locking handle 23. Following this, as shown in Figure 5, with the operation lever 141 turned towards the left direction (indicated by the curved arrow) the user mounts the dust receptacle 130 in the cyclone housing portion 13 of the cleaner body 10.

Referring now to Figures 7 and 8, in a next step, it is possible for the dust receptacle 130 to be misaligned with respect to the cyclone unit 20, e.g. by mistake. If this happens, due to the arrangement of the guide slit 143, the guide pin 131 will not transpose into the first guide slit 143a, but instead will be positioned in either the second guide slit part 143b or in the interruption groove 143c. As the operation lever 141 is turned rightwards, as shown in Figure 8, the guide pin 131 of the dust receptacle 130 will either be interrupted by the second guide slit part 143b, or by the interruption groove 143c, and so will become separated from the cyclone housing portion 13.

As described above, unlike in the conventional cases in which the dust receptacle 130 is able to be incorrectly mounted in the cyclone housing portion 13, thus causing possible breakage or deformation of the structure if force is applied, the dust receptacle 130 described above becomes separated from the cyclone housing portion 13 if a user turns the operation lever 141 with force, even if the user is unaware of the incorrect position.

Accordingly, resulting damage to the parts can be prevented. Also, there is no gap or crack left between the dust receptacle 130 and the cyclone unit 20 due to the incorrect mounting and so leakage of contaminants is substantially avoided.

Meanwhile, if the dust receptacle 130 is in a normal position and so correctly aligned with the cyclone unit 20, the guide pin 131 will engage the corresponding first guide slit part 143a. Accordingly, by turning the operation lever 141, the dust receptacle 130 is raised and a proper connection with the cyclone unit 20 is made, the guide pin 131 movement being uninterrupted.

The above-described upright type vacuum cleaner is capable of preventing incorrect mounting of the dust receptacle 130 to the cyclone unit 20.

Since damage to the parts, or abnormal operation of the cleaner, due to the incorrect mounting of the dust receptacle 130, is substantially prevented, product reliability increases.

CLAIMS

1. An upright type vacuum cleaner, comprising:

a cleaner body having vacuum generating means arranged therein and a suction brush disposed at a lower portion thereof;

a cyclone unit for separating contaminants from air which is drawn into the cleaner body, and for discharging contaminant-free air through an outflow passage connected to the vacuum generating means, the air being drawn into the cyclone unit through an inflow passage connected to the suction brush;

a dust receptacle, removably connectable to the underside of the cyclone unit, for collecting contaminants that have been separated from the air by the cyclone unit;

a movable locking unit arranged to connect and separate the dust receptacle to and from the underside of the cyclone unit by moving the dust receptacle upwards and downwards; and

means for preventing incorrect connection of the dust receptacle to the underside of the cyclone unit.

2. A vacuum cleaner according to claim 1, wherein the incorrect connection preventing means comprises:

a position guiding pin protruding from a predetermined position on a lower part of the dust receptacle; and

a guide slit for receiving the position guiding pin, the guide slit being formed at a predetermined position on the locking unit and arranged such that, if the dust receptacle is incorrectly mounted in relation to the cyclone unit, the guide slit interrupts movement of the locking unit, or causes separation of the dust receptacle from the cyclone unit, as the movable locking unit is operated.

3. A vacuum cleaner according to claim 1 or claim 2, wherein the locking unit further comprises:

an operation lever rotatably mounted on the cleaner body; and

a locking disc arranged so as to be moved upwards or downwards, according to the rotating direction of the operation lever, thereby to enable the dust receptacle to be

moved upwards, to engage the cyclone unit, and downwards, to disengage the cyclone unit.

4. A vacuum cleaner according to claim 3 when appended to claim 2, wherein the incorrect connection preventing means is arranged such that, if the dust receptacle is incorrectly mounted in relation to the cyclone unit, the guide slit interrupts movement of the operation lever, or causes separation of the dust receptacle from the cyclone unit. as the operation lever is turned.

5. A vacuum cleaner according to claim 4, wherein the guide slit further comprises:

a first guide slit, formed in an upper surface of the operation lever, the first guide slit having a predetermined width and being arranged such that the guide pin is received within the first guide slit when the dust receptacle is in a normal position;

a second guide slit, extending from the first guide slit in a direction generally transverse to the turning direction of the operation lever, the second guide slit being arranged to receive the guide pin, when the dust receptacle is incorrectly mounted, and to cause separation of the dust receptacle from the cyclone unit; and

an interruption groove, formed between the first and second guide slits, and arranged to receive the guide pin, when the dust receptacle is incorrectly mounted, and to cause turning of the operation lever to be interrupted.

6. An upright-type vacuum cleaner comprising:

a cleaner body including a dust chamber, suction means, an air inflow path, and an air outflow path, the air outflow path connecting the dust chamber with the motor driving chamber;

a suction brush pivotally coupled to the cleaner body, the air inflow path of the cleaner body connecting the suction brush to the dust chamber;

a cyclone body mounted in the dust chamber, the cyclone body being in communication with the air inflow path and the air outflow path;

a removable dust barrel coupled generally beneath the cyclone body;

a movable locking unit arranged to connect or separate the dust barrel to or from the cyclone body by raising or lowering the dust barrel in the dust chamber; and

misalignment prevention means arranged to prevent a connection being made between the dust barrel and the cyclone body when the dust barrel is not in a predetermined alignment position with respect to the cyclone body.

7. A vacuum cleaner according to claim 6, wherein the misalignment prevention means comprises a protrusion formed on a bottom surface of the dust barrel, and a slit formed in an upper surface of the movable locking unit, the slit having a first portion arranged to receive the protrusion if the barrel is in the predetermined alignment position, and a second portion arranged to receive the protrusion if the barrel is not in the predetermined alignment position, movement of the locking unit being restricted if the protrusion is received in the second portion.

8. A vacuum cleaner according to claim 7, wherein the slit has a third portion arranged to receive the protrusion if the barrel is (a) not in the predetermined alignment position and (b) not in the position whereby the protrusion is received in the second slit portion, the third portion being arranged to guide the protrusion such that the barrel is moved further away from the predetermined alignment position.

9. A vacuum cleaner according to claim 6, wherein the locking unit comprises a lever arm assembly pivotably mounted on the cleaner body beneath the dust barrel, the misalignment prevention means comprising the combination of a protrusion on one of the dust barrel or the lever arm assembly, and a guide slot arrangement on the other of the dust barrel and the lever arm assembly, the slot arrangement receiving the protrusion.

10. A vacuum cleaner according to claim 9, wherein the guide slot is formed in the lever arm assembly and comprises a cam slot for moving the dust barrel towards or away from a position in which it is coupled to the cyclone body as the lever arm is pivoted.

11. An upright-type vacuum cleaner, constructed and arranged substantially as hereinbefore described and shown with reference to Figures 3 to 7 of the drawings.

Amendments to the claims have been filed as follows

14

CLAIMS

1. An upright type vacuum cleaner, comprising:

a cleaner body having vacuum generating means arranged therein and a suction brush disposed at a lower portion thereof;

a cyclone unit for separating contaminants from air which is drawn into the cleaner body, and for discharging contaminant-free air through an outflow passage connected to the vacuum generating means, the air being drawn into the cyclone unit through an inflow passage connected to the suction brush;

a dust receptacle, removably connectable to the underside of the cyclone unit, for collecting contaminants that have been separated from the air by the cyclone unit;

a movable locking unit arranged to connect and separate the dust receptacle to and from the underside of the cyclone unit by moving the dust receptacle upwards and downwards; and

means for preventing incorrect connection of the dust receptacle to the underside of the cyclone unit.

2. A vacuum cleaner according to claim 1, wherein the incorrect connection preventing means comprises:

a position guiding pin protruding from a predetermined position on a lower part of the dust receptacle; and

a guide slit for receiving the position guiding pin, the guide slit being formed at a predetermined position on the locking unit and arranged such that, if the dust receptacle is incorrectly mounted in relation to the cyclone unit, the guide slit interrupts movement of the locking unit, or causes separation of the dust receptacle from the cyclone unit, as the movable locking unit is operated.

3. A vacuum cleaner according to claim 1 or claim 2, wherein the locking unit further comprises:

an operation lever rotatably mounted on the cleaner body; and

a locking disc arranged so as to be moved upwards or downwards, according to the rotating direction of the operation lever, thereby to enable the dust receptacle to be

moved upwards, to engage the cyclone unit, and downwards, to disengage the cyclone unit.

4. A vacuum cleaner according to claim 3 when appended to claim 2, wherein the incorrect connection preventing means is arranged such that, if the dust receptacle is incorrectly mounted in relation to the cyclone unit, the guide slit interrupts movement of the operation lever, or causes separation of the dust receptacle from the cyclone unit, as the operation lever is turned.

5. A vacuum cleaner according to claim 4, wherein the guide slit further comprises:

a first guide slit, formed in an upper surface of the operation lever, the first guide slit having a predetermined width and being arranged such that the guide pin is received within the first guide slit when the dust receptacle is in a normal position;

a second guide slit, extending from the first guide slit in a direction generally transverse to the turning direction of the operation lever, the second guide slit being arranged to receive the guide pin, when the dust receptacle is incorrectly mounted, and to cause separation of the dust receptacle from the cyclone unit; and

an interruption groove, formed between the first and second guide slits, and arranged to receive the guide pin, when the dust receptacle is incorrectly mounted, and to cause turning of the operation lever to be interrupted.

6. An upright-type vacuum cleaner comprising:

a cleaner body including a dust chamber, suction means, an air inflow path, and an air outflow path, the air outflow path connecting the dust chamber with a motor driving chamber;

a suction brush pivotally coupled to the cleaner body, the air inflow path of the cleaner body connecting the suction brush to the dust chamber;

a cyclone body mounted in the dust chamber, the cyclone body being in communication with the air inflow path and the air outflow path;

a removable dust barrel coupled generally beneath the cyclone body;

a movable locking unit arranged to connect or separate the dust barrel to or from the cyclone body by raising or lowering the dust barrel in the dust chamber; and

misalignment prevention means arranged to prevent a connection being made between the dust barrel and the cyclone body when the dust barrel is not in a predetermined alignment position with respect to the cyclone body.

7. A vacuum cleaner according to claim 6, wherein the misalignment prevention means comprises a protrusion formed on a bottom surface of the dust barrel, and a slit formed in an upper surface of the movable locking unit, the slit having a first portion arranged to receive the protrusion if the barrel is in the predetermined alignment position, and a second portion arranged to receive the protrusion if the barrel is not in the predetermined alignment position, movement of the locking unit being restricted if the protrusion is received in the second portion.

8. A vacuum cleaner according to claim 7, wherein the slit has a third portion arranged to receive the protrusion if the barrel is (a) not in the predetermined alignment position and (b) not in the position whereby the protrusion is received in the second slit portion, the third portion being arranged to guide the protrusion such that the barrel is moved further away from the predetermined alignment position.

9. A vacuum cleaner according to claim 6, wherein the locking unit comprises a lever arm assembly pivotably mounted on the cleaner body beneath the dust barrel, the misalignment prevention means comprising the combination of a protrusion on one of the dust barrel or the lever arm assembly, and a guide slot arrangement on the other of the dust barrel and the lever arm assembly, the slot arrangement receiving the protrusion.

10. A vacuum cleaner according to claim 9, wherein the guide slot is formed in the lever arm assembly and comprises a cam slot for moving the dust barrel towards or away from a position in which it is coupled to the cyclone body as the lever arm is pivoted.

11. An upright-type vacuum cleaner, constructed and arranged substantially as hereinbefore described and shown with reference to Figures 3 to 7 of the drawings.